

FIRST COLLECTION OF *CHRYSOMYA MEGACEPHALA* (FABR.) IN EUROPE (DIPTERA: CALLIPHORIDAE)

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Abstract.—The first occurrence of *Chrysomya megacephala* (Fabricius) in continental Europe is reported here. This species was caught in a locality of southeastern Spain, using wind-oriented traps baited with liver and fish. The implications of this new distribution are discussed.

Key Words.—Insecta Calliphoridae, *Chrysomya megacephala*, new distribution, Spain, Europe.

Resumen.—Se notifica por vez primera la introducción del califórido *Chrysomya megacephala* (Fabricius) en Europa. Esta especie fue capturada en una localidad del sureste de España, atraída por trampas orientadas por el viento cebadas con hígado y pescado. Se discuten las implicaciones de su nueva distribución.

Blow flies of the genus *Chrysomya* Robineau-Desvoidy are abundant in warmer parts of the world and are important from medical and sanitary standpoints. Until recently, they were restricted to the Old World (Zumpt 1965) with seven species confined to the Palearctic region (Rognes 1998). *Chrysomya albiceps* (Wiedemann) is the only native species in Europe, where it breeds in organic wastes. Two *Chrysomya* species, *C. chloropyga* (Wiedemann) and *C. megacephala* (Fabr.), are expanding their ranges to the Canary Islands (Báez et al. 1981) and Madeira (Báez 1990) and were probably introduced from nearby Africa.

Chrysomya megacephala is known commonly as the Oriental latrine fly because of its association with latrines (Zumpt 1965). This species is regarded as among the most dangerous dipteran vectors of pathogens found in human and livestock feces (Wells 1991). It has dispersed from its original distribution in the Oriental and Australasian regions (Zumpt 1965) throughout the Palearctic region. It was introduced into South America more than two decades ago (Guimaraes et al. 1978) and into United States (Wells 1991, De Jong 1995).

There are several explanations for their spread, tied to human activities, including the movement of livestock (Santos Lima & Luz 1991). Several authors including Illingworth (1962) and Báez et al. (1981) have proposed that for *C. chloropyga* and *C. megacephala* the increasingly commercialized maritime route provides flies which colonize islands. At present, the distribution of *C. megacephala* covers in the Palaeartic: East Siberia, the Far East (former Soviet Union), Iran, Afghanistan, China, Japan, Egypt, Canary Islands, Madeira and Oriental, Australian, Afrotropical, Neotropical and Nearctic regions (Schumann 1986, Báez 1990).

Adult *C. megacephala* are found commonly near human dwellings (Zumpt 1965), attracted to carcasses, feces and other decomposing organic matter, for feeding and oviposition. The high natural population densities of this species and its high degree of synanthropy (Linhares 1981), allow *C. megacephala* to be potential secondary agent of myiasis in humans and other animals (Zumpt 1965) and a major pest of fish products (Wall et al. 2000). Moreover, it can serve as a mechanical vector of enteropathogenic organisms to humans living in substandard

Table 1. Blow fly species caught in wind oriented traps baited with liver and fish in "Clot de Galvany" (Alicante, Spain).

calliphorids species	Liver		Fish		Totals
	Female	Male	Female	Male	
<i>Chrysomya albiceps</i>	178	14	129	7	328
<i>Lucilia sericata</i>	94	4	15	0	113
<i>Calliphora vicina</i>	13	9	17	1	40
<i>Calliphora vomitoria</i>	5	0	7	0	12
<i>Chrysomya megacephala</i>	2	0	6	0	8
Totals	319		182		501

conditions (Santos Lima & Luz 1991). This species is also of forensic importance (Wells & Kurahashi 1994).

This paper reports the first incidence of *C. megacephala* in continental Europe.

MATERIALS AND METHODS

Study Sites.—The area in southeastern Spain where the specimens were caught in a lowland area of 25,000 m² is periodically flooded with fresh water (38°15' N, 0°40' W, Elche, Alicante Province). The habitat is arid and about 2 km W of Mediterranean Sea. This site is related to several humid zones on the occidental European Mediterranean Coast and is of great intercontinental importance as a route for migratory birds from northern Europe to Africa. The vegetation is composed of the plant communities *Frankenio corymbosae*–*Arthrocnemetum macrostachyi* Rivas-Martínez et al., 1984, in the flooded zone and *Stipo tenacissimae*–*Sideritetum leucanthae* O. Bolòs, 1957, in the area close to the lagoon (Aranda & Sansano 1992).

Collections.—In Nov 1997, on the wetland area, two wind-oriented traps (WOT) (Vogt et al. 1985) baited with 300 g of fresh sardine each and two others baited with 300 g fresh pork liver each (both baits were previously frozen for three days). Traps were removed after three days.

Identification of Species.—The captured specimens were identified according González Mora & Peris (1988).

All collected calliphorids were deposited in the Entomology Collection of Alicante University (CEUA), department of Ciencias Ambientales y Recursos Naturales.

RESULTS AND DISCUSSION

In November 1997 with WOT traps, five species of calliphorids were caught (Table 1). *Chrysomya albiceps* was the most abundant necrophagous blow fly collected, followed by *Lucilia sericata* (Meigen). Moreover, six female specimens of *C. megacephala* were collected in traps baited with fish and two females in traps baited with pork liver.

In continental Europe and the Iberian Peninsula, the only species of *Chrysomya* is *C. albiceps* (Schumann 1986). This species is associated with myiasis in Africa (Zumpt 1965) but ecologically, it may be more important as a predator of other dipteran larvae. *Chrysomya albiceps* is most abundant in temperatures below 26° C (Holdaway 1933), whereas *C. megacephala* seems to tolerate a wider temper-

ature range and may become abundant throughout tropical, subtropical, and temperate areas, with a northern limit similar to that of *C. albiceps* (Baumgartner & Greenberg 1984). Both species seem to be synanthropic, with a preference for human settlements.

Throughout the Iberian Peninsula, *L. sericata* and *C. albiceps* are the most abundant necrophagous flies (Martínez-Sánchez et al. 2000). The capture of eight adult females of *C. megacephala* within this limited geographic area almost certainly indicates a breeding populations. In areas where both *Chysomya* coexist, predation on larvae of *C. megacephala* by larvae of *C. albiceps* is evident, reducing the size of the surviving mature larvae and increasing the mortality rate of the former, though the survival rate of *C. albiceps* is also decreased (Aguiar-Coelho & Milward-de-Azevedo 1995). In the Canary Islands *C. megacephala* although not common, coexists with *L. sericata* and *C. albiceps* on most islands (Báez, personal communications).

Records of *C. megacephala* capture in Spain have been sent to Dr. Martin J. H. Hall at the Natural History Museum, Department of Entomology, Medical and Veterinary Division, London, which is a FAO Reference Laboratory for Screw-worm & the Animal Myiases.

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